

# 8XC51RA/RB/RC

## Expanded RAM Microcontroller

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DESIGN  
AHEAD

### PRODUCT OVERVIEW

The 8xC51RA/RB/RC provide additional 256 Bytes of random access memory (RAM) space and hardware Watch Dog Timer for increased data parameter handling, high level languages usage and system reliability. They are code and pin compatible with existing MCS<sup>®</sup> 51 microcontrollers and therefore allow easy upgrade paths to all MCS 51 microcontroller applications. The 8xC51RA/RB/RC bring you all the benefits you would expect from the original innovator of the MCS 51 microcontroller family.

### PRODUCT DESCRIPTION

The Intel 8xC51RA/RB/RC belong to the new Expanded RAM microcontroller series based on the MCS 51 microcontroller architecture. The 8xC51RA/RB/RC are code and pin compatible with the existing MCS 51 microcontrollers and therefore are direct 'drop-in' replacements to existing MCS 51 microcontroller applications.

Products in this Expanded RAM series are:

- 80C51RA - ROMless + 512B RAM + WDT
- 83C51RA/87C51RA - 8KB ROM/EPROM + 512B RAM + WDT
- 83C51RB/87C51RB - 16KB ROM/EPROM + 512B RAM + WDT
- 83C51RC/87C51RC - 32KB ROM/EPROM + 512B RAM + WDT

These products are functionally compatible with the Intel 8xC52/54/58, except for the additional 256 Bytes of on-chip data RAM and hardware WDT.

The new microcontrollers are specially designed to accommodate increased data parameter handling and usage of high level languages. The hardware WDT allows for increased system reliability.

System development tools support are available from Intel third party tools vendors.

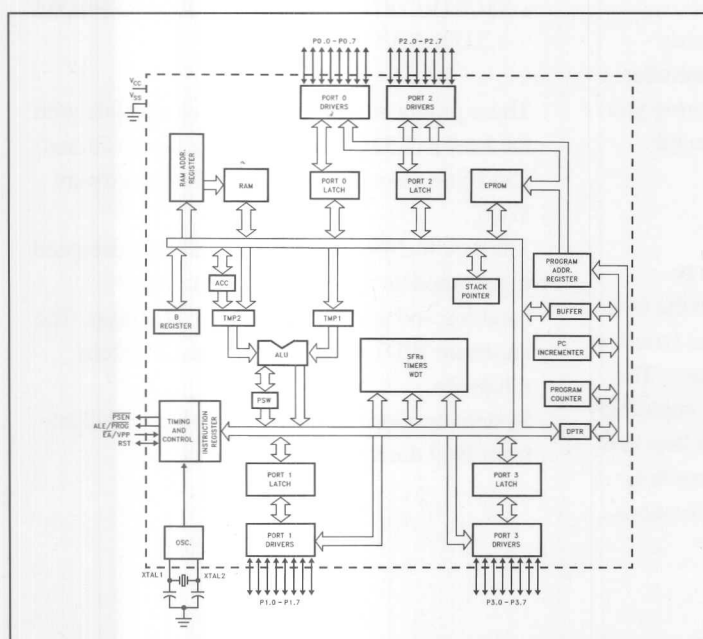
### KEY FEATURES

- MCS 51 Microcontroller Compatible Instruction Set
- 3.5 MHz to 24 MHz operation
- 8K/16K/32K On-Chip Program Memory
- 512 Bytes On-Chip Data RAM
- Hardware Watchdog Timer (one time enabled)
- 64 KBytes External Program Memory Space
- 64 KBytes External Data Memory Space
- Programmable I/O Lines
- Three 16-Bit Timers/Counters
- Programmable Clock Out
- Up/Down Timer/Counter
- Level Program Lock System
- Interrupt Sources with 4 Priority Levels
- Quick Pulse Programming Algorithm
- Programmable Serial Channel with:
  - Framing Error Detection
  - Automatic Address Recognition
- ALE Disable Feature to Reduce EMI Emission
- Power Saving Idle and Power Down Modes
- ONCE (On-Circuit Emulation) Mode
- Available in 44Ld PLCC, with future offerings of 40Ld P-Dip and 44Ld QFP

intel<sup>®</sup>

# 8XC51RA/RB/RC Expanded RAM Microcontroller

FEATURES	BENEFITS
■ 512 Bytes On-Chip Data RAM	■ Increased internal memory capacity for data parameter handling and usage of high level languages.
■ RAM Paging	■ Provide flexibility for external data memory access while maintaining RAM paging usage.
■ MCS <sup>®</sup> 51 microcontroller code and pin compatible	■ Direct drop-in replacement for existing MCS 51 microcontroller applications with requirements for additional RAM space.
■ 8K/16K/32K On-Chip Program Memory	■ Flexibility in using different memory options for development, production and maximum value to price.
■ Hardware Watchdog Timer (WDT)	■ Increased system reliability.



**Block Diagram**

## SUPPORT TOOLS

Intel provides hardware and software development tools to support the development of applications based on the 8xC51RA/RB/RC. Tools include in-circuit emulators, assemblers, compilers and programmers.

## APPLICATIONS INFORMATION

The 8xC51RA/RB/RC microcontrollers will make ideal performance upgrade paths for all existing MCS 51 microcontroller applications. The 512 Byte on-chip data RAM available on the 8xC51RA/RB/RC make them suited for applications requiring increased data parameter handling functions and high level languages usage such as CD-ROM drives, scanners, intelligent security systems, wireless handsets, analog linecards and etc.

## Intel Reference Numbers

<b>FaxBACK System:</b>	<b>1 (800) 628-2283 or (916) 356-3105</b>
<b>Application Bulletin Board System:</b>	<b>(916) 356-3600</b>
<b>Other Intel Support Intel Literature Center:</b>	<b>1 (800) 548-4725 7 a.m. to 7 p.m. CST</b>
<b>Retail PC and Network Products:</b>	<b>1 (800) 538-3373 or (503) 629-7000 7 a.m. to 7 p.m. PST</b>
<b>General Information Hotline:</b>	<b>1 (800) 628-8686 &amp; (916) 356-3104 5 a.m. to 5 p.m. PST</b>

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